THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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PEONY DISEASES OBSERVED IN A PENNSYLVANIA NURSERY

John S. Niederhauser

In Delaware County a large nursery where a total of 65 acres of peonies were grown was visited with Dr. R. S. Kirby, of Pennsylvania State College, August 31.

Leaf Blight (Cladosporium paeoniae). This disease was present in every field surveyed, but was generally doing very slight damage to the plants. The blight tended to be more severe in the older plantings, however, and in 2 of these 70% of the plants were bearing leaves with 1 to 15 lesions per plant.

Mosaic (Virus). This striking disease was present as a trace in 2 fields.

Black Root Rot (Cause unknown). In the fields of variety Avalanche, a very destructive disease of the underground portions of the plants was noted. The disease was seen in every plot of this variety, and only this variety was affected. The grower said that the same disease was prevalent only on the Avalanche plot at a similar peony farm near Geneva, New York.

In 1938 the grower had first noticed this disease in one section of a field, and his observations since then indicate that it had increased and spread from this spot every year. In addition, isolated and scattered plants in the same and in other plantings of Avalanche have later died from the same cause. In each case where the disease appeared in a new locality, it was progressively worse there in succeeding years.

The first symptoms of the trouble are a wilting and scorching of the leaves, either of the entire plant or occasionally only of certain stalks. The plants rapidly die, and it may be only a few days after the first symptoms are noted that the above ground parts are entirely dead. The grower remarked that he has seen plants flower normally, and soon afterwards develop symptoms and die. When the tuberous roots are dug up, they are seen to be entirely decayed. The surface of the roots is deep black in color. When cut open the entire inner portion is rotted and olivaceous brown in color. The texture of these rotted roots is punky when dry and cheesy when wet.

The plants of the variety Avalanche were brought to this farm in 1934, and some were transplanted directly to the field. The rest were grown for 3 years in the grower's nursery, and then transplanted to the field. The disease first appeared in the plot that was planted in 1934 and is now most serious there. Nearly 50% of the plants in this plot are now gone, and indications are that it will soon be a complete loss.

The causal agent is not known as yet. Reports of a possibly similar disease of peony roots have come from Quebec[1] and from Connecticut[2].

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1 Coulson, J. G. Peony diseases. 15th Annual Rept. Quebec Soc. Prot. Plants 1922-23: 67-70. 1923. An unidentified Fusarium was constantly associated with a Peony root rot characterized by a blackening of the "rhizome" and the base of the stem.

2 Anonymous. In Rept. of Director for year ending Oct. 31, 1931. Connecticut Agr. Exp. Sta. Bull. 337: 451-493. 1931. A note is made of the occurrence of a black root rot on peony. The causal agent is said to be Thielavia basicola.

Rhizoctonia sp.--Scar-like lesions were noted on peony roots being divided for planting stock. These lesions were caused by Rhizoctonia sp., and are shallow and dark-brown, extending from 1-2 cm along the root.

Cercospora Leaf Spot (Cercospora variicolor Winter). The most serious foliar disease was a leaf spot caused by Cercospora variicolor Winter.[3] This disease was general and severe in 3 plantings of peonies, and was present in every field surveyed. The most serious damage was in a 3-year-old planting where all plants were affected, and 80% of the leaves bore spots. Some of the larger leaves each had as many as 20 spots. In older plantings there were more lesions on the lower leaves than on the upper ones.

The first observable symptom after infection is a faint yellowing in a small area about 1 mm in diameter, accompanied by a slight wrinkling of the epidermis. As the spot enlarges and the center dies, dark gray patches of fruiting appear on the necrotic portion. The largest spots measured 12 mm in diameter, and where numerous lesions were present, the spots would often coalesce. When the spot has attained a size approximating a centimeter in diameter, there is a series of "concentric rings". This apparent zonation is due to the collapsing of the invaded leaf tissues and subsequent wrinkling of the epidermis. The center of the lesion is by this time greyish with the fruiting of the Cercospora, and the outer, zoned portion assumes a purplish-brown color with a rather sharply delimited border.

Verified collections of Cercospora variicolor have thus far been made only in Missouri, where the type was collected, and North Carolina. This species has also been reported in Indiana, Kentucky, Nebraska, Iowa, Illinois, and Wisconsin but Dr. Charles Chupp feels that at least some of these collections are of another species, C. paeoniae Tehon and Daniels. Due to the fact that some confusion exists as to the basis for separating these 2 species, some space will be devoted below to a tabulation of their differences[4].

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[3] The identification of the causal agent as a Cercospora was independently done by Dr. L. C. Overholts, Pennsylvania State College, and by Dr. Freeman Weiss, Division of Mycology and Disease Survey, U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture, Beltsville, Maryland. Dr. Charles Chupp, Department of Plant Pathology, Cornell University confirmed these identifications, and definitely named the species as Cercospora variicolor Winter.

[4] While this table is based on observations made personally by the writer, the data included should be primarily credited to Dr. Charles Chupp, who called the writer's attention to the main points of difference between the 2 species, and who kindly furnished slides and notes for making the comparison.

	C. paeoniae	C. variicolor
Fruiting	Usually on both surfaces.	Usually on upper surface only.
Fascicles	Not dense (2-15 conidiophores per fascicle); widespreading.	Dense (25-100 conidiophores per fascicle) and compact.
Conidiophores	Stout, long (up to 125 microns long).	Slender, shorter (about 35 microns long).
Spores	Hyaline, acicular (gradually tapering), usually straight or slightly curved. Base is "subtruncate".[5]	Very slight color (hyaline to very pale olivaceous), linear to narrowly obclavate (more or less parallel sides), usually strongly curved. Base is "obconically truncate."[5]

It should be noted here that in the original descriptions[6], the spots caused by C. paeoniae are said to be 2-10 mm in diameter and those caused by C. variicolor are said to be 10-25 mm in diameter. The size of the lesions in the writer's Pennsylvania collection of C. variicolor is nearer that described for C. paeoniae. Thus doubt is cast upon the value of this character for separating the 2 species. Other characters of the spots offer little basis for separating them.

Another point that should be cleared up here concerns the size of the conidiophores in C. paeoniae. In the original description of the species, the length is given as 20-60 microns. Yet an examination of a slide made from the type material reveals that the conidiophores may be considerably larger (up to 125 microns long) and that the majority of the conidiophores exceed 60 microns in length.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

SOME REPORTS ON DISEASES OF ORNAMENTAL HOSTS

Reports are of Emergency Plant Disease Prevention Project surveys.

DISEASES ON GREENHOUSE ORNAMENTALS IN MISSOURI: One of the largest ranges devoted to the production of potted ornamentals was visited in Kansas City with Mr. Lester Davis, Assistant State Entomologist, during the week ending September 9. The stock was limited to a few species of

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6 C. variicolor: Hedwigia 24: 205. 1885, and Jour. Myc. 1: 124. 1885.
C. paeoniae: Mycologia 17: 247. 1925

plants.

A Collar Rot, tentatively identified as due to Rhizoctonia solani, was killing approximately 2% of the young Poinsettia plants in 2- to 3-inch pots. Fasciation (cause unknown) was observed affecting a number of the Poinsettia stock plants.

Ringspot (physiogenic) was causing slight disfiguration of foliage of Saintpaulia.

Leaf Spot (Septoria chrysanthemella) was prevalent on the Chrysanthemums, but was responsible for only minor damage.

Leaf Spot (Cercospora hydrangeana ?) was causing much disfiguration of the Hydrangea foliage. -- T. W. Bretz.

DISEASES OF ORNAMENTALS IN COLORADO GREENHOUSES: During the week ending July 8, in company with Mr. J. L. Forsberg of the Colorado Experiment Station, a survey was made in greenhouses in the Denver area.

On Carnation, Fusarium Yellows (F. [oxysporum f.] dianthi) was found in small amounts in all greenhouses inspected. Branch Rot and Leaf Spot caused by Alternaria dianthi was present in some greenhouses. The Potentate variety appeared to be more susceptible than other varieties grown in the Denver area. A slight amount of Rust (Uromyces caryophyllinus) was observed on all varieties. Mosaic (Virus) appears to be more prevalent than in previous years.

On Rose, Powdery Mildew (Sphaerotheca humuli) was present in small amounts in all ranges visited. A trace to 1% of Black Spot (Diplocarpon rosae) was observed in a few greenhouses. A trace of Mosaic (Virus) infection occurred in all greenhouses.

Hydrangea plants in one section of a range were heavily infected by Powdery Mildew (Erysiphe polygoni).

A disease of undetermined origin, possibly virus in nature, was found on 50% of the Cyclamen plants in one greenhouse. -- E. W. Bodine.

ROSE DISEASES IN PENNSYLVANIA: In a 12-acre field in Chester County which contained a large number of different varieties of roses, Black Spot (Diplocarpon rosae) was present on about 10% of the leaves. Anthracnose (Sphaceloma rosarum) was found on 4% of the leaves on some varieties, and was present only as a trace on others. Powdery Mildew [Sphaerotheca sp.] was present as a trace.

In a large greenhouse of roses at Kennett Square (Chester County), the plants in one bed were noticeably paler green and less vigorous than those in other beds. Investigation revealed that the soil down a foot or more was waterlogged and even marbled. Dr. R. S. Kirby of Pennsylvania State College, who accompanied the writer, felt that inadequate drainage had given rise to the poor condition of the soil, and that the installation of tile drains would correct the trouble. The grower further confirmed this diagnosis and remedy by remarking that the trouble was present only in those beds where the drains had not been installed. -- John S. Niederhauser, August 30.

FURTHER NOTE ON OCCURRENCE OF ELM PHLOEM NECROSIS IN MISSOURI

T. W. Bretz

Prior to the realization that Phloem Necrosis (Virus) of elm was present in epiphytotic proportions in certain locations in Missouri(PDR, Sept. 22) reports had been received from southwestern Missouri concerning the death and decline of numerous elms in and around Neosho in Newton County. In order to determine whether Phloem Necrosis might possibly be responsible for the dying trees in this area, a survey trip was made into that section of the State during the week of September 23. From September 25 to 28, the St. Louis and Kansas City areas were revisited with Roger U. Swingle, Division of Forest Pathology, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture; C. M. Tucker, Department of Botany, University of Missouri; and J. Allison Denning, State Entomologist, for further observations on the extent of the elm phloem necrosis outbreaks in those areas. Additional locations for this disease have been reported by C. C. Goff and H. Ivan Rainwater, Assistant State Entomologists.

Phloem Necrosis infected trees have been observed in widely scattered locations in the State. The most serious outbreaks appear to be in St. Louis and Kansas City. The disease is scattered through all sections of these metropolitan areas and it is estimated by various observers that 1000 to 2000 trees have died or are dying in each of the 2 cities. Infected trees have also been observed in rural locations in St. Louis and Jackson Counties.

Locations of known diseased trees other than those mentioned in previous reports are Nevada (Vernon County), near Lamar (Barton County), Joplin (Jasper County) and Neosho (Newton County) in southwestern Missouri; Marshall (Saline County) in the central section of the State; Pacific (Franklin County) in east-central Missouri; near Cape Girardeau (Cape Girardeau County) and Benton (Scott County) in the southeastern section, reported by C. C. Goff, and in Louisiana (Pike County) in northeastern Missouri, reported by H. Ivan Rainwater.

On the basis of the behavior of this disease in other States in which it has been observed for a number of years, it appears likely that more serious outbreaks may be anticipated in the next few years. It also appears probable that, with such widely scattered centers of infection, the disease may be present in other locations in Missouri. The American elm is found in many sections of the State along streams, and in forest areas, and it is widely planted in municipalities for shade tree purposes. The presence of the disease in the known locations to date, therefore, presents a definite and serious threat to the elms in Missouri.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

DISEASES REPORTED ON OAK TREES

Reports are of Emergency Plant Disease Prevention Project surveys.

DROUGHT INJURY AND LEAF SPOT IN WEST VIRGINIA: Upon receiving a complaint that oak trees were dying in unusual numbers this year in the large land holdings in southern West Virginia, the writer was conducted by a

guide to the areas most affected. Most dead trees were seen along ridges and the tops of mountains where the effects of severe drought would be felt first. It is believed that the severe drought of this summer caused the death of large numbers of trees that had been weakened by various agencies.

A Leaf Spot characterized by abnormal discoloration of the veins was caused by Actinopelte dryina (Sacc.) Hoehn., according to Dr. Lindsay S. Olive, Mycologist of the Emergency Plant Disease Prevention Project, to whom specimens were sent.--R. E. Atkinson, Sept. 4-16.

OAK WILT AND OTHER DISEASES IN WISCONSIN: Oak Wilt caused by Chalara quercina Henry was observed on July 10 on oaks in 5 counties. Specimens were taken in Dane, Columbia, Marquette, Waushara, and Waupaca Counties. During the middle of August, Leaf Rust caused by Cronartium quercuum was observed on Black Oak, Quercus velutina, in Adams and Wood Counties; and Leaf Spot (Marssonia quercus) on Black Oak in Adams and Wood Counties and on Burr Oak, Q. macrocarpa, in Wood County.--Edwin E. Honey

FINDING OF OAK WILT IN MISSOURI: During the first week in September, dying oak trees (belonging to the Black-Oak group) in a residential area in St. Louis were called to the attention of the writer by Mr. J. Allison Denning, State Entomologist. From 6 to a dozen trees appeared to be affected. Foliar symptoms and a streaking in the sap-wood of affected branches suggested Oak Wilt (Chalara quercina). Specimens collected from diseased trees were sent to Dr. W. W. Ray, Mycologist of the Emergency Plant Disease Laboratory, Stillwater, Oklahoma, for culturing. Dr. Ray reports that the Oak-Wilt fungus had been isolated in every case, from the samples submitted. This, apparently, is the first known location for Oak Wilt in Missouri.--T. W. Bretz.

NOTES ON THE OCCURRENCE OF TRYBLIDIELLA SPP. IN FLORIDA

Arthur S. Rhoads

During the last few years considerable interest has been manifested in species of Tryblidiella because of the similarity of the pycnospores to those of the genus Diplodia. This close affiliation of Tryblidiella with Diplodia is apparently the reason that the former fungus has been suspected of being wound-parasitic (PDR 26: 67. 1942). Two species, namely, T. fusca (Ell. & Ev.) Rehm and T. rufula (Spreng.) Sacc., occur fairly commonly in Florida, as evidenced by numerous collections during the past year (1943-44), listed below. The writer has been particularly interested in making observations on the occurrence of these fungi to determine whether there was any evidence of parasitic activity.

Tryblidiella fusca (Ell. & Ev.) Rehm

On slash of woolybucket Bumelia (Bumelia lanuginosa (Michx.) Pers.), by Dr. W. A. Murrill southwest of Micanopy (Marion Co.)

On dead twigs of American holly (Ilex opaca Ait.) at Orlando (Orange Co.).

On dead twigs of yaupon (Ilex vomitoria Ait.) by Dr. W. A. Murrill at Gainesville (Alachua County).

On dead twigs of mistletoe (Phoradendron flavescens (Pursh) Nutt.) parasitic on myrtle oak (Quercus myrtifolia Willd.) at Orange City (Volusia County).

On dead twigs and branches of sand pear (Pyrus pyrifolia (Burm.) Nakai) at Gainesville (Alachua County).

On dead twigs and branches of shining sumac (Rhus copallina L.) at Gainesville (Alachua County).

In addition to these the following collections occur in the Herbarium of the Florida Agricultural Experiment Station at Gainesville:

On dead twigs of crapemyrtle (Lagerstroemia indica L.) at Elkton and South Jacksonville.

On dead twigs and branches of Chinese pistache (Pistacia chinensis Bunge) at Gainesville (4 colls.).

On dead stems of mistletoe lying on the ground, collected by the writer at Cocoa.

On dead twigs and branches of sand pear at Gainesville (4 Colls.).

On decorticated stem of Florida elder (Sambucus simpsonii Rehd.) at Gainesville.

On dead cane of grapevine (Vitis sp.) at Poe Springs near Gainesville.

Tryblidiella rufula (Spreng.) Sacc.

On dead twigs and branches of tough Bumelia (Bumelia tenax (L.) Willd.) on sand dunes near the ocean between Winter Beach and Vero Beach (Indian River County).

On a fallen branch of sour orange (Citrus aurantium L.) at East Palatka (Putnam County).

On twigs and branches of lower limbs pruned from grapefruit (Citrus paradisi Macf.) trees west of Vero Beach (Indian River County); also on twigs of dead branches pruned from declining grapefruit trees near Winter Haven (Polk County).

On twigs and branches of lower limbs pruned from sweet orange (Citrus sinensis Osb.) trees west of Vero Beach (Indian River County); also found occasionally on dead twigs and branches of living sweet orange trees but vastly more abundant on dead material lying on the ground.

On pruned branches of kaki persimmon (Diospyros kaki L. f.) west of Fort Pierce (St. Lucie County).

On dead twigs of thorny Elaeagnus (Elaeagnus pungens Thunb.) hedge, collected by Dr. G. F. Weber at Gainesville (Alachua County).

On dead twigs and stems of Virginia sweetspire (Itea virginica L.) south of Barberville and at Glencoe 3 miles west of New Smyrna (Volusia County) and west of Eustis Transfer (Lake County), occurring abundantly in the first 2 localities.

On twigs of fallen branch of Southern Magnolia (Magnolia grandiflora L.) at Newman's Lake near Gainesville (Alachua County).

On dead twigs of fallen sapling of sweetbay Magnolia (Magnolia virginiana L.) south of Barberville (Volusia County).

On felled sprout of chinaberry (Melia azedarach L.) at Gainesville (Alachua County).

On dead twigs of Southern waxmyrtle (Myrica cerifera L.) south of Barberville (Volusia County).

On dead twigs and branches of shorebay (Persea littoralis Small) from top of tree broken by a falling dead tree at Snapper Creek north of Chapman field (Dade County).

On dead twigs and branches of Chinese pistache at Gainesville (Alachua County).

On twigs of slash of common guava (Psidium guajava L.) west of Vero Beach (Indian River County).

On dead twigs and branches of sand pear at Gainesville (2 colls.).

On dead canes of blackberry (Rubus sp.) south of Barberville (Volusia County).

On dead twigs of Siberian elm (Ulmus pumila L.) at Gainesville (Alachua County).

On dead stems of wild grape (Vitis sp.) south of Barberville (Volusia County).

On twig of unidentified fallen hardwood branch at Gainesville (Alachua County).

In addition to these the following collections of this fungus occur in the Herbarium of the Florida Agricultural Experiment Station at Gainesville:

On dead citrus twigs at Altoona, Gainesville, Holly Hill, and Manatee.
On dead twig of Southern Magnolia at Gainesville.
On dead twigs and branches of Chinese pistache at Gainesville (2 colls.).
On dead twigs and branches of pear (Pyrus sp.) at Gainesville (2 colls.).
On dead oak (Quercus sp.) root west of Gainesville.
On dead twigs of roseacacia locust (Robinia hispida L.) near Gainesville.

Judging by the relative frequency with which these two species of Tryblidiella have been collected, T. rufula would appear to be much more common and widespread than T. fusca. In all cases both fungi occurred on dead twigs or branches and appear to be fairly common saprophytes. In no case was there any evidence whatever of parasitism. Where these fungi developed on twigs or branches of living trees or shrubs they obviously did not do so until after these parts had died from natural causes.

Fungi Overgrowing Apothecia of Tryblidiella.

Part of the material of Tryblidiella rufula collected on grapefruit and orange branches at Vero Beach was found to have Cenangium ravenelii (Berk. & Curt.) Sacc.) growing on the apothecia. The occurrence of this fungus on Tryblidiella was reported by Voorhees (Mycologia 31: 120. 1939). The writer has found another fungus much more frequently overgrowing the apothecia of T. rufula in collections on grapefruit and orange from Vero Beach, sour orange from East Palatka, kaki persimmon from Fort Pierce, and Virginia sweetspire from Eustis Transfer. This is a very inconspicuous gelatinous fungus which is so minute when the Tryblidiella apothecia are desiccated and closed as to be scarcely apparent, merely obscuring the usual clean-cut appearance of the apothecia or giving them an aged appearance. In fact, this fungus was observed only after twigs with Tryblidiella were soaked in water to expand the apothecia for identification, whereupon it

became readily apparent as whitish to discolored gelatinous masses. Apothecia overgrown by this fungus failed to open upon soaking. The gelatinous fungus, which was identified by Dr. Erdman West, Mycologist of the Florida Agricultural Experiment Station, appears to be Sirobasidium brefeldianum Moell. Identification was expedited by moist-chambering a twig until the fungus revived sufficiently to develop basidia. The occurrence of this fungus on apothecia of Tryblidiella does not appear to have been reported previously.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

PRE-EMERGENCE LOSSES AND SEEDLING ROOT ROT AND THEIR CONTROL IN GUAYULE NURSERIES

Bailey Sleeth

Losses from pre-emergence damping-off and seedling root rot were high in the guayule nurseries in California in 1943. These losses were highest in the nurseries at Salinas and Oceanside. Post-emergence damping-off was present but did not cause any appreciable loss. Seedling emergence at Salinas was unusually poor from about May 4 to May 18. From 30 to 85% of the viable seed sown failed to emerge. In many blocks where a satisfactory stand had emerged, losses from seedling root rot were severe. As the result of poor emergence and seedling root rot many nursery beds and blocks had to be resown. Poor emergence and losses from seedling root rot were associated with either cool weather or excessive soil moisture, or both conditions. Fungi (Pythium, Phytophthora, and Rhizoctonia) isolated from seedlings affected with root rot were highly pathogenic when tested in the greenhouse and caused both pre-emergence damping-off and seedling root rot.

Table 1. Results of 4 tests with 3 different fungicides as seed protectants for guayule seed in soil infested with pathogenic fungi.

Fungicide[a]	Emerged seedlings 15 days after sowing, based on seed sown — Tests[b]			
	A	B	C	D
	percent	percent	percent	percent
Fermate	39.5	10.9	13.5	35.4
Spergon	40.7	10.8	11.9	34.7
Thiosan	38.7	18.8	14.9	35.7
Check	19.7	4.6	7.7	5.7

[a]Dosage 1%

[b]Different seed lots, which varied in percentage of filled and viable seed, were used.

Pre-emergence losses have been significantly reduced in greenhouse tests by the use of seed protectants (Table 1). Tetra-chloro-para benzoquinone (Spergon), tetra-methyl thiuramdisulfide (Thiosan), and ferric dimethyl dithiocarbamate (Fermate), gave satisfactory control. One percent dosage by weight was used on dry seed.

The use of seed protectants, while significantly increasing emergence in

soil infested with pathogenic fungi, did not materially affect the occurrence of seedling root rot in greenhouse tests. The occurrence and severity of seedling root rot in both the nursery and greenhouse were greatly influenced by the soil moisture content. The number of diseased seedlings and amount of mortality were highest in excessively wet soil. When the soil moisture was reduced from saturation, or near saturation, many seedlings affected with root rot recovered.

GUAYULE RESEARCH PROJECT, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING. SALINAS, CALIFORNIA.

OTHER REPORTS ON DISEASES OF SPECIAL CROPS

Reports are of Emergency Plant Disease Prevention Project surveys.

DISEASES AND DROUGHT INJURY OF COTTON IN MISSISSIPPI: The week of September 11 to 16 was spent in the Vicksburg-Leland-Greenwood-Crystal Springs areas. Wilting of cotton has been under observation at several places in the Delta area since July. When the condition was first observed, the weather had been extremely dry for several weeks -- so dry that cracks in the soil up to 6 inches across were not uncommon. Areas were noted where cotton plants were completely wilted. These areas apparently were not restricted to any particular type of topography, that is, they occurred on low as well as on high ground. Other than the wilting, the plants showed no symptoms of disease in either the roots or stems. It seems reasonable to assume that drought was, in a large part, responsible for this condition. A few farmers with whom the writer talked had planted cotton as soon as one week after the turning under of winter cover crops. In these instances, it is possible that the early follow-up of cover crops plus the drought brought about the wilting. Just how much actual loss resulted from the wilting, directly or indirectly, is problematical, but evidently some loss was suffered.

In most of the fields surveyed, barely a trace of Boll Rot was noted. In one large field near Greenwood, however, over 15% of the bolls were rotted. Fusarium, Diplodia [gossypina], and Phytomonas [Xanthomonas] malvacearum were the organisms found to be associated with the rotted bolls.--Douglas C. Bain.

REPORTS ON SUGAR BEET DISEASES: On September 26, sugar beets were examined in Polk County, MINNESOTA, between East Grand Forks and Fisher. The principal disease was Cercospora Leaf Blight (C. beticola), and in some fields heavy destruction of the foliage had occurred. Hitherto this Leaf Spot has not occurred in appreciable amounts in the Red River Valley; in 1943 a late and light epidemic had developed in the Moorhead region but only a trace of Leaf Spot was seen there in the East Grand Forks area. The development of Leaf Spot in 1944 in the northern sugar beet section of the Red River Valley is unusual and probably has resulted from the favorable environmental conditions that developed during the heavy rains of August. It will be of interest to see if this disease maintains itself in the northern sugar beet area, since this section has been considered the most disease-free area for beets in Minnesota.--Ian W. Tervet.

In Montrose County in western COLORADO during the week ending September 16, trace amounts of Curly Top (Virus) and Crown Rot (Rhizoctonia solani)

were found. The variety U. S. No. 22 is grown exclusively in this area.

During the week ending September 23, surveys were made in Adams, Arapahoe, Boulder, Denver, Otero, Pueblo, Crowley, Lincoln, Washington, Logan, Morgan, and Weld Counties. Cercospora Leaf Spot was most prevalent in fields in the vicinities of Rocky Ford, Swink, and Howley, in Otero County, in Sterling in Logan County, and Brush in Morgan County. In many fields 100% of the plants were infected and leaf burning was taking place. In Larimer, Boulder, and Weld Counties only a trace was found in the fields inspected. Phoma betae causing Leaf Spot was found to be general over the territory surveyed but present only in trace amounts. Rhizoctonia Crown Rot was also found to be widespread over the State, and was present in amounts ranging from a trace to 1%. Pythium butleri causing Root Rot was noted in a few plants in a low spot in one field in Weld County. Mosaic (Virus) was seen in a few plants in Morgan County.--E. W. Bodine.

FURTHER OBSERVATIONS ON DISEASES OF COMMERCIALLY-GROWN WORMSEED IN NORTHERN MARYLAND: In the Taylorsville section of Carroll County, where Chenopodium anthelminticum is grown for its medicinal oil content (see PDR, Sept. 7, p. 883), Cercospora Leaf Spot (C. anthelmintica) was found in 50% of the fields visited during the middle of August, occurring on the lower leaves and causing but little damage. Fusarium Wilt (F. pallidoroseum) [F. semitectum var. majus] was affecting about 1.5% of the plants in the fields visited. Genetic Variegation averaged about 1% in each field.--E. A. Walker.

DISEASES OBSERVED ON SOYBEANS IN ARKANSAS

Howard W. Larsh

Approximately 850 acres were surveyed during the period September 5 to 18, including 5 trial plantings and 17 commercial plantings.

Bacterial Pustule (Xanthomonas phaseoli var. sojense) remains the most prevalent and destructive leaf disease of soybean in this region. Infection has increased considerably in some of the commercial plantings during the past month. A marked increase was noticed near Altheimer (Jefferson County), where slight defoliation and moderate yellowing of the leaves had occurred. In a trial planting near Texarkana (Miller County), the most severe spotting by Bacterial Pustule was observed, although from all indications of soil moisture and plant vigor, this region has had less rainfall than any other section of the State in which soybeans are grown.

Wildfire (Phytomonas [Pseudomonas] tabaci) occurred in varying amounts in nearly every planting surveyed. In most cases, it was limited to the lower leaves where typical spots could be found. Even in the most severely infected plantings the reduction in leaf surface was never more than 5%.

Pod and Stem Blight (Diaporthe phaseoli var. sojae) was observed in every planting surveyed. In several fields considerable stem blighting could be found and in some cases dead plants would be covered by fruiting bodies of this fungus. Usually the evidence present suggested that the plant had been killed by some other cause. Plants having any type of mechanical injury usually would be infected by this organism. Very few specimens were

found suggesting that this organism was the primary cause of the death of an infected plant.

Anthracnose (Glomerella glycines) occurred in trial plantings at Marianna (Lee County) and Clarkedale (Crittenden County). In both plantings it was rather difficult to differentiate the Anthracnose infection from other fungi present on the infected petioles and stems. Laboratory examination of infected stems revealed spores of the Anthracnose fungus difficult to find; however, setae were found in abundance. The amount of loss was hard to estimate since infections were closely associated with Bacterial Pustule and Pod and Stem Blight.

Downy Mildew (Peronospora manshurica) usually occurred in varying amounts in each planting; this was especially true of the varietal trial plantings. The disease could usually be found on the varieties Woods Yellow, Boone, and White Biloxi. In a commercial planting in Jefferson County, presumably of the Ogden variety, Downy Mildew was well distributed but causing very little damage at the time of this survey.

Frog-Eye Leaf Spot (Cercospora sojina) ranked next in importance to Bacterial Pustule in causing leaf spotting. It was observed in commercial and trial plantings. In a commercial planting of a late-maturing variety, it was limited to only a few plants with minor spotting. One variety in the trial plantings at Marianna and Texarkana was severely infected. If favorable weather conditions prevail during the next 2 weeks many of the late-maturing varieties may be infected more severely.

Charcoal Rot (Sclerotium bataticola) could be found in nearly every planting surveyed; incidence was limited from a trace to not more than 2%. Southern Blight (S. rolfsii) resulted in a reduction in stand at Osceola (Mississippi County) and Hope (Hempstead County). In the trial planting at Osceola some varieties in a localized section of the field suffered a reduction of at least 5%. An occasional plant was found with distinct Leaf Spots caused by Alternaria sp. Most of the plants observed to be infected by this fungus during the August survey (PDR, Sept. 1, p. 870), had dropped their leaves and only a few new infections occurred.

Mosaic (Virus)-infected plants were observed in every trial planting surveyed. The number of plants infected varied from a trace to nearly 5%. Plants with symptoms characteristic of Bud Blight [Tobacco Ringspot Virus] were observed in a planting near Clarkedale.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

SOYBEAN DISEASES IN INDIANA AND ILLINOIS

J. S. Tidd

During the week ending September 9, the writer, together with Dr. Benjamin Koehler of the Illinois Agricultural Experiment Station, surveyed soybeans in an area covering east-central, southwestern, and western Illinois. Surveys were made in 15 counties, beginning with Champaign County and continuing southwest to St. Clair County in the Belleville area, thence north and west to Adams, Hancock, and Schuyler Counties, thence east to Urbana.

Soybeans, in general, were in good condition except for varying amounts

of Downy Mildew, Bacterial Pustule, Bacterial Blight (Pseudomonas glycinea and Bud Blight. In some fields one or more of these would predominate, the number of infected plants ranging from traces to as much as 3%.

In only 2 fields was the amount of infection severe. A 20-acre planting south of Quincy in Adams County was found with Downy Mildew lesions covering approximately 5% of the leaf surface. Another field in Adams County was observed with all leaves showing Bacterial Pustule. Bud Blight was present to the extent of 3% in one planting in Madison County. Here, only the buds and stems (when cut open) showed symptoms of disease. However, in 2 25-acre fields of the Lincoln variety (grown from certified seed), in Hancock County, Bud Blight plants amounted to 1% and the pods were blotched and dropping.

Diaporthe sojae, causing Pod and Stem Blight, was present in 25 acres of an early variety in Cass County, infecting 20% of the plants. The crop loss was estimated at 10%. A trace of Wildfire (Bacterial) was observed in 2 fields, one in Macoupin County, the other in Adams County.

Wilt was not observed in any soybean plantings. At this time, it might be stated, however, that a letter from Dr. D. A. Preston of the Emergency Plant Disease Prevention Project gives Fusarium oxysporum f. tracheiphilum and Rhizoctonia solani as the 2 organisms isolated from material sent him earlier in the season from plants that were wilted and dying in a field in Warren County, Indiana. If Fusarium is the organism responsible, this is the first report (PDR 28 (23): 753, Aug. 1, 1944), as far as the writer is aware, by the Survey for this season of Fusarium Wilt in soybeans in Indiana or Illinois.

Soybeans are one of Indiana's principal crops. During the week ending September 16 fields were surveyed for disease in an area south of Lafayette to Owen County, thence east to Shelbyville in Shelby County, north to Madison County, thence northwest to Tippecanoe County. Roughly, this comprised the central portion of the State.

Downy Mildew, Bacterial Pustule, and Bacterial Blight were encountered in most fields. Many of the plants showed a few lesions and occasionally a field was observed with all plants infected by one of these organisms. However, severity was light and the average crop loss from all 3 organisms probably would not amount to more than 3%.

Bud Blight could be found in almost all of the fields. A trace to 1% of the plants were infected. A 10-acre field in Shelby County, however, was observed with 10% of the plants infected and the loss estimated at 5%.

Charcoal Rot was found to have killed 2% of the soybean plants in a 20-acre field in Putnam County, 1% of the plants in a 5-acre planting in Johnson County, and 2% of the plants in a 20-acre field in Hamilton County. The sclerotia of the fungus could be found by removing the outer tissue of the lower stem and root.

During the week ending September 23 soybeans were surveyed in east-central Indiana. From Lafayette east to Portland in Jay County, thence south to Liberty in Union County, west to Rushville in Rush County, thence north and west, comprised the area covered. Soybeans were maturing rapidly and therefore many of the usual leaf troubles could not be observed. Charcoal Rot was not found. Diaporthe Pod and Stem Blight was present on occasional plants in several fields of the 20 visited, in one of 10 acres in Howard County 10% of the plants being infected. The loss was estimated at 5%. Only one field still green was seen, this in Blackford County on bottomland where 5% of the plants showed Bud Blight and traces of Bacterial Blight.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

OTHER REPORTS ON SOYBEAN DISEASES

Reports are of Emergency Plant Disease Prevention Project surveys.

VIRGINIA AND WEST VIRGINIA: In varietal trials at Morgantown, West Virginia, the most common leaf disease was Bacterial Blight, which was present on all varieties except L 35-155 and Morse 230. It was not causing much damage. Diaporthe Pod and Stem Blight was severe in Bansei and Chief.

The most common disease was Anthracnose (Glomerella glycines), which was blighting pods of Bansei, Funk's Delicious, Hokkaido, L 35-155, Kingewa, Scioto, and Manchu. It was causing stem lesions and blight of Jugan and Ohio 66-685.

Mosaic was especially prevalent on the edible varieties Bansei, Empior, Imperial, and Hokkaido.

The early varieties at Blacksburg, Virginia, have lost their leaves and as they approach maturity stem spotting is very common. Many plants are blighted prematurely and immature pycnidia of Diaporthe sojae are present on the stems. This is by far the most serious disase in the plots and is severe on Viking, Potoka, Chief, Macoupin, S 55-10, Boone, Gibson, and C 101.

Bacterial Blight is the most common leaf disease; although not causing defoliation it was severe on some varieties.

Anthracnose is occasionally found on blighted stems and lateral branches.

Alternaria Leaf Spot was found on the leaves of most varieties just before they fell. Small angular spots, some with and some without gray centers, were quite common. On these spots a species of Cercospora, probably an atypical form of C. sojina, was sporulating.--R. E. Atkinson, Sept. 4-16

SOUTH CAROLINA: One small field of soybeans in Greenwood County showed nearly 100% Mosaic infection.--Alton E. Prince, Aug. 28-Sept. 9.

ALABAMA: Large acreages of soybeans are grown in Baldwin County following white potatoes. A number of fields were inspected. In general, from 2 to 3% of the plants had been killed by Sclerotium rolfsii. Cercospora Leaf Spot was prevalent in all fields examined. A few older plantings were found where the disease had caused considerable leaf shedding; however, losses were considered to be slight.--G. M. Stone, week of Aug. 28

TEXAS: A trace of Bacterial Pustule was seen on soybeans grown on Texas Agricultural Experiment Station Substation No. 8, at Lubbock. A few plants in the same planting had been killed by Sclerotium rolfsii. A trace of Sclerotium bataticola was also seen.--G. E. Altstatt, Sept. 8-13

MINNESOTA AND SOUTH DAKOTA: Only a few fields of soybeans were seen in eastern South Dakota, and the acreage seems to have been reduced from that of 1943. In southwestern Minnesota, few fields were seen, and only from Jackson eastward were there as many fields as in recent years.

The most common diseases are Bacterial Pustule and Bacterial Blight. In a few fields, some defoliation has occurred because of these diseases, but in general loss is negligible. Bud Blight was found in South Dakota and generally throughout southern Minnesota. No fields were seen where loss from this disease appeared to be heavy. One field had about 20% of the

plants infected, but infection apparently occurred late and little loss of the pods had resulted. Average infection in fields within 10 days of maturity did not exceed 1%.

Vegetable varieties grown near Fairmont, Minnesota, were heavily infected with Mosaic. One field of Hokkaido had at least 50% of the plants infected, with about 5% of the plants severely stunted.

During part of the time in South Dakota, the writer was accompanied by W. F. Buchholtz of South Dakota State College.--Ian W. Tervet, Sept. 11-16

IOWA: During the period August 30 to September 9, surveys were made in the northwestern part of the State, and in Jasper, Poweshiek, Mahaska, Marion, Polk, and Dallas Counties in the central and south-central parts.

The season as a whole has been favorable for soybeans in Iowa. In many fields the plants are waist high and still appear to be growing. Bacterial Pustule is uniformly spread over the plants but does not appear to be doing much damage. Bacterial Blight is widespread and more destructive although not so uniformly distributed as Bacterial Pustule. Estimation of the damage caused by the 2 pathogens is difficult to make but it would probably vary from a trace to 1%.

Hail injury was found in the northern part of the State, and in some cases appeared severe. A guess would place the damage at 15% over small areas. A few plants, on which the lower leaves were yellow, yielded a Fusarium from discolored roots. Bud Blight was found in a number of fields reducing the set of pods from a trace to more than 50%. Frog-Eye was observed occasionally but is of minor importance. Mosaic was seen in most fields as a trace, with occasionally 1 to 2% in local areas.--Edgar F. Vestal.

MISSOURI: The few fields of soybeans observed during the week ending September 9 were maturing rapidly, with accompanying defoliation. A number of fields already had been harvested for hay. In the fields examined, Bacterial Blight and Bacterial Pustule were prevalent on practically all of the foliage. A trace of Mosaic was observed in one field and Bud Blight was noted in 2 fields, affecting 5 and 10% of the plants respectively.

Early-planted soybeans were maturing rapidly in northwestern Missouri during the week ending September 16. Much defoliation has occurred and the pods set are, in general, well filled and ripening. Later-planted fields are still green and growing vigorously. Although the bacterial leaf spots, Bacterial Blight and Bacterial Pustule, were prevalent in all stands, the infection was light and causing little damage. Vigorous Downy Mildew infection was observed in 40% of the plantings, lesions spotting 1/2 to 2/3 of the foliage, with the fungus sporulating luxuriantly. About 2/3 of the fields showed a few scattered, Mosaic-infected plants. Bud Blight infection was noted in 60% of the plantings. Except in one field in which an estimated 3% of the stand was infected, only a few scattered plants appeared to be diseased.--T. W. Bretz.

CORN DISEASES IN INDIANA

J. S. Tidd

Field corn and soybeans, 2 of Indiana's principal crops, were surveyed for disease during the week ending September 16, in an area south of Lafayette to Owen County, thence east to Shelbyville in Shelby County, north to Madison County, thence northwest to Tippecanoe County. Roughly, this comprised the central portion of the State.

Diplodia Stalk Rot (D. zeae) was common in practically all fields approaching maturity and traces occurred in late plantings. The average number of infected plants ranged from 5 to 10%. Stewart's Disease [Bacterial Wilt] (Bacterium stewartii) was observed in all fields not yet matured but the amount of loss from this disease would be difficult to estimate as the severity was slight in most plantings, ranging from a few small lesions per leaf to 10% of the leaf surface blighted. Occasional Smut (Ustilago maydis)-infected plants were observed.

The most severely diseased corn field was one of 40 acres on bottomland in Johnson County, in which an estimated 25% of the plants were dying prematurely from Diplodia Stalk Rot, 20% of the leaf surface of all plants was covered with Stewart's Disease lesions, 2% of the plants were Smut-infected, and Ear Rots caused by Diplodia zeae, Fusarium moniliforme, and Penicillium sp. were already showing. Loss in this field from all disease was estimated at 25%.

During the week ending September 23, field corn in east-central Indiana was surveyed. From Lafayette east to Portland in Jay County, thence south to Liberty in Union County, west to Rushville in Rush County, thence north and west, comprised the area covered.

Within the past week corn had matured rapidly and it was increasingly more difficult to find fields that were still green. In those approaching maturity, premature dying of many plants was common, Diplodia Stalk Rot being responsible. Some fields were observed with only an occasional plant thus rotted, but in general, this was not true, from 5 to 40% of the plants usually being infected with D. zeae.

On maturing corn Bacterial Wilt lesions were difficult to detect. However, of 4 fields still green in Clinton, Carroll, and Howard Counties, traces of Bacterium stewartii were found in 2, while 10 to 20% of the leaf surface was covered with lesions in the other 2 fields, of nearly 100 acres each.

Traces of Smut were found in almost all plantings. In only one was it at all severe, this on bottomland in Blackford County, 10% of the plants being smutted.

Ear Rots were making an appearance: Diplodia zeae, Fusarium moniliforme, and Penicillium sp. being common. Hormodendron sp. was found in one field in Howard County and Physalospora zeae in Union County. From Jay County south to Union County in eastern Indiana and in Rush County, Ear Rot was more prevalent. Several fields were observed with 20 to 30% of the ears with decay at the tips, either following worm injury or where the husks did not cover the ends. Corn was more mature here than farther north. At the present time losses from these various fungi would have to be considered as minor, yet, since it will be some time before much of this corn is ready for harvest, it is not inconceivable that definite losses can later be attributed to one or several of the ear and kernel rotting fungi.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

DISEASES OBSERVED ON CORN IN MISSOURI

T. W. Bretz

Reports have come in to the University of Missouri concerning the premature death of field corn plants in certain localities in the northwestern section of the State. Examination of some specimens submitted for diagnosis indicated that Diplodia zeae was responsible for this condition. Since the early Stalk-Rot phase of the Diplodia disease complex probably accounts for the greatest damage caused by this pathogen, other than that which results from the Ear-Rot phase, a general survey of the corn plantings in the northwestern counties was made during the week ending September 16, to determine the extent of this premature dying. Counts were also made for the prevalence of the various ear-rotting organisms. The fields selected for examination were those which were approaching maturity. Much of the corn in this area is still very green and it seems likely that some fields may not mature before killing frosts arrive.

Premature dying of plants was observed in all fields selected for examination. Affected plants were cut at the lower nodes, and in practically all instances characteristic Diplodia zeae symptoms were present. In many cases the pycnidia of the fungus were present in large numbers. The number of plants showing Diplodia infection ranged from 4 to 40%, averaging 19.5% for all fields. Some of the infected stalks were barren, but the majority had developed ears which were light and chaffy in character, thereby accounting for some reduction in yield.

Smut is of minor importance this season as a factor in reducing yields. Smut infection at the nodes ranged from none to 4%, averaging slightly more than 1% for the entire area. Ear infections likewise ranged from none to 4%, but averaged only 0.6% for all fields.

The total number of ears infected with the various Ear-Rot pathogens ranged from 16 to 54%, averaging about 25%. Fusarium sp. and Penicillium sp. accounted for the greatest number of infected ears. In most cases these infections followed corn earworm damage and the fungi were limited to the tip-end of the ears and along the feeding channels of the insect. The percentage of ears infected with the various causal agents follows:

Fusarium sp.	2 to 32%	Average 8.7%
Penicillium sp.	0 to 28%	7.3%
Gibberella saubinetii [G. zeae]	2 to 10%	4.1%
Nigrospora oryzae	0 to 12%	3.3%
Diplodia zeae	0 to 6%	1.2%
Aspergillus sp.	0 to 2%	Trace

Evidence of Bacterial Wilt foliage infection was observed in the majority of fields and light leaf Rust infection was prevalent throughout the area.

In southwestern Missouri during the week ending September 30, the crop in general was mature and many plantings were already cut and put in shock. Diplodia Stalk Rot was observed in all fields, ranging from 4 to 34%, averaging 17% for all fields examined. In one field (Pettis County), in which much of the corn was down, examination of the basal portions

revealed that 40% of the stand was affected with Charcoal Rot (Sclerotium bataticola), as well as 18% Diplodia Stalk Rot. The ears in this field were extremely small and light and chaffy in character, indicating rather uniform, premature killing of the plants.

Smut was found to occur in more than trace amounts in only a few fields, the highest percentage of stalk infection being 8, the average for all fields 1.2. Only a trace of ear infection was noted.

The incidence of Ear Rots due to the various causal organisms ranged from 16 to 56%, averaging 39%. This was distributed among the various causal agents as follows:

Penicillium sp.	2 to 24%	Average 14.2%
Fusarium sp.	4 to 24%	11.3%
Gibberella saubinetii [G. zeae]	4 to 16%	9.2%
Diplodia zeae	0 to 10%	3.0%
Nigrospora oryzae	0 to 2%	0.5%
Aspergillus sp.	0 to 2%	0.5%

An occasional ear infected with Rhizopus sp. was also noted.
EMERGENCY PLANT DISEASE PREVENTION PROJECT

OTHER REPORTS ON CORN DISEASES

Reports are of Emergency Plant Disease Prevention Project surveys.

VIRGINIA AND WEST VIRGINIA: Notes on hybrid corn varieties were taken at Morgantown, West Virginia, and at Blacksburg, Virginia. The most important disease in the trials at Morgantown was Helminthosporium Leaf Blight (H. turcicum). Smut was also present. Very little Chlorotic Spot was seen in the corn plots at Morgantown.

At Blacksburg Leaf Blight was more severe than at Morgantown. Rust was found on most varieties. A necrosis associated with the leaf veins, tentatively identified as Bacterial Wilt, was found on the upper leaves of many varieties.

Leaf Spot due to Colletotrichum graminicolum was seen occasionally.

Purple Sheath Spot was found at both locations. Ear Rot [cause not specified] was more common at Morgantown.--R. E. Atkinson, Sept.4-16.

MINNESOTA AND SOUTH DAKOTA: During the week of September 11 to 16, a survey was made in eastern South Dakota and southern Minnesota. During part of the time in South Dakota, the writer was accompanied by W. F. Buchholtz of South Dakota State College.

Heaviest infection of Stalk Rot (principally Gibberella zeae) on corn occurred in Codington, Clark, Spink, and Beadle Counties in South Dakota. Average infection was approximately 30% of plants with stalks dead, fields ranging up to 80% in severity. South and east of this area much less Stalk Rot was observed; in the area from Brookings to Sioux Falls, average infection was between 5 and 7%, with some fields having as high as 40% dead stalks. The increased use of hybrid corn in the eastern and southeastern part of South Dakota is important in the reduction of Stalk Rot.

Heaviest Stalk Rot in Minnesota was found in the southwestern section, several fields having from 30 to 40% infection. Eastwards the prevalence of Stalk Rot decreased, although a few fields planted to susceptible var-

ieties had up to 30% dead stalks. It is difficult to estimate the average infection from Stalk Rot in southern Minnesota, for much of the corn is very late.

Corn Smut is of relatively little importance in eastern South Dakota and southern Minnesota, the infection being much less than in most years.

Rust is common but of slight importance.

Black Bundle (Cephalosporium acremonium) was found sparingly in some fields in south-central Minnesota. M. B. Moore reports the occurrence of this disease at University Farm, St. Paul, Minnesota.--Ian W. Tervet.

DISEASES OBSERVED ON SORGHUM IN OKLAHOMA AND ARKANSAS

Howard W. Larsh

Approximately 650 acres of Sorghum and Broomcorn were surveyed in Oklahoma during the period August 14 to 30.

Bacterial Spot (Pseudomonas holci) infections were observed in nearly all of the Sorghum plantings surveyed, the extent of infection varying from a trace to nearly 100%. The most severely infected plants occurred in a 25-acre planting in Adair County where at least 85% of the leaf surface was invaded. This was the most prevalent and caused the greatest reduction in leaf area of all the bacterial diseases of Sorghum.

Bacterial Streak (Xanthomonas holcicola) and Bacterial Stripe (Pseudomonas andropogoni) were observed in several plantings; however, in most instances the amount of reduction in leaf surface was less than 5%. Occasional plants were observed to be severely infected but in no case was either organism causing losses similar to those from Bacterial Spot.

Covered Kernel Smut (Sphacelotheca sorghi) occurred in Adair, Bryan, Cherokee, Delaware, Johnston, Muskogee, Sequoyah, and LeFlore Counties. The most severely infected field observed was near Tishomingo in Johnston County, where a loss of 25% was estimated.

Leaf Spot caused by Septorella sorghi Ell. & Ev. resulted in a reduction in leaf area of nearly 30% in a 20-acre field near Durant (Bryan County). The infection occurred rather early in the growing season and caused some reduction in yield. A similar loss was apparent in plantings at Stillwater and Perkins (Payne County).

This Leaf Spot was observed also in every Broomcorn planting in the Lindsay (Garvin County) region. Very little loss resulted as not more than 5% of the leaf surface was invaded.

Anthracnose (Colletotrichum graminicolum)-infected Sorghum and Broomcorn plants were observed in 2 plantings near Lindsay, limited to a few plants in a localized area of each field.

Dwarfed Sorghum plants showing discolored areas on the roots were collected from a field in Tillman County and sent to Dr. W. W. Ray for culture studies. Dr. Ray isolated the following fungi from the discolored areas: Sclerotium bataticola 5 times; Rhizoctonia sp., Helminthosporium sp., and Fusarium spp, each twice; and Fusarium moniliforme once.

In Arkansas, approximately 175 acres were surveyed during the period September 5 to 18.

Bacterial Spot resulted in a reduction of nearly 85% of the leaf surface in a small planting near Hunter (Woodruff County). This infection must

have occurred rather early in the life of the plants since the grain produced was very small and shriveled. The disease was apparent, in varying amounts, in every planting surveyed.

Septorella Leaf Spot was observed in several plantings. In most cases reduction in leaf area varied from a trace to nearly 15%. The most severely infected planting located was in Desha County with an average of nearly 15% of the leaf area invaded.

The lowermost leaves of a small planting near Texarkana were infected by Rust (Puccinia purpurea).

Covered Kernel Smut resulted in slight losses in many of the plantings surveyed, and very few plantings were free. The most severe incidence noted was a loss of nearly 10% in Lincoln County.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

CONTROL OF ONION SMUT IN INDIANA WITH ARASAN AND FERMATE

C. T. Gregory

Demonstrations on the control of Onion Smut [Urocystis cepulae] have been conducted in Indiana on 11 farms during the past 3 years. In 1942 and 1943 Arasan was used at the rate of 1 lb. mixed with 2 lbs. of onion seed (1-2 treatment). No sticker of any kind was used on the seed; the dust was mixed thoroughly with it. None of the surplus dust was removed. The mixture was poured into the seed hopper.

Fermate was used on one farm in 1944, being applied in the same way but in proportions of 1 lb. on 2 lbs. of seed, and of 1 lb. on 4 lbs. of seed (1-4 treatment).

The early trials with Arasan showed that at the rate of 1 lb. on 2 lbs. of seed, the mixture of seed and dust "caked" or "bridged" over the agitator in the seed hopper, making it necessary to poke a stick into the seed mass at frequent intervals.

In each case the Arasan treatment was compared with the standard formaldehyde drip treatment but in most cases no untreated rows were left. In every case the Arasan treatment either completely eliminated the Smut or reduced it to a trace, and was noticeably more effective than the formaldehyde treatment.

Prior to 1944, the treatments were used only in fields of large onions where the planting rate is about 4 lbs. of seed per acre. In 1944, the treatment was extended to fields of set onions where 50 lbs. of seed are used per acre. In addition, trials were made of greater dilutions of Arasan to determine if the Smut could be controlled and also to obviate the difficulties caused by the "caking" or "bridging" of the seed at the 1-2 treatment.

The following treatments were used in 1944:

On seed sown for large onions --

1 lb. Arasan on 2 lbs. of onion seed
1 lb. Arasan on 4 lbs. of onion seed
1 lb. Arasan on 8 lbs. of onion seed
1 lb. Fermate on 2 lbs. of onion seed
1 lb. Fermate on 4 lbs. of onion seed

On seed sown for set onions --
5 lbs. Arasan on 12 lbs. of onion seed
1 lb. Arasan on 12 lbs. of onion seed
1 lb. Arasan on 10 lbs. of onion seed

The results were as follows:

In every case Arasan controlled the Smut completely or reduced it to a trace. With large onions all rates of application were effective in Smut control, and the rates of 1 lb. on 4 lbs. and 8 lbs. of seed greatly reduced the "bridging" effect of the Arasan. Fermate at both rates of treatment was as effective as the Arasan.

In onions grown for sets all treatments controlled the Smut but the 5 lbs. on 12 lbs. of seed caused difficulty in "bridging", whereas the other rates eliminated this difficulty.

In fields where untreated checks were left, Smut infection ranged from 12 to 26%. It is probable that Smut infection was actually much greater than a count of the matured onions would indicate. Apparently the disease kills many of the small plants, as is shown by the count made in one field in which one untreated row was left between plots treated with formaldehyde and Arasan. The onion plants were counted in 5 feet of adjacent rows, with the following results:

Treatment	Total number of plants	Number of plants with Smut
Arasan	360	0
Check (untreated)	80	11
Formaldehyde	238	3

These data would indicate that a large number of the seedlings had been killed, probably by the Smut.

PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION

REPORTS ON DISEASES OF POTATO

Reports are of Emergency Plant Disease Prevention Project surveys.

LATE BLIGHT AND OTHER DISEASES IN NORTHERN NEW ENGLAND: The Central Maine potato crop is almost half dug. Some fields are yielding as low as 85 bushels per acre but the average for the Newport-Milo area is about 185 bushels (65 barrels) per acre, about 3/4 of that expected in an average year. Drought was quite severe this year in most sections of the area.

According to Mr. Roy Bacon of the inspection service there has been practically no Tuber Rot to date. Only 2 fields in the area developed Late Blight (Phytophthora infestans) late in the season and it was not serious. Less Bacterial Ringrot (Corynebacterium sepedonicum) and Blackleg (Erwinia atroseptica) [E. phytophthora] occurred than last year. Verticillium Wilt (V. albo-atrum) has been worse than in an average year.

A survey was made in the Northern New Hampshire potato-growing area just as digging was getting under way. At Colebrook yields were ranging from 250 to 350 bushels per acre with an average between 300 and 325 bushels. Yields at Lancaster were about the same, but probably nearer 300 bushels.

However, at Milan the summer drought had been more severe and about 2/3 of a crop was expected. In Walpole Cobblers yielded only about 150 bushels per acre but the crop of Green Mountains and Houmas was expected to be good.

Late Blight was found in Percy in 2 late fields in which the tops were still green. The disease was heavily scattered throughout a 5-acre field of Green Mountain and a 15-acre field of Houma. A trace of Tuber Blight could be found in the Green Mountain field. Tuber set and size in both fields was excellent and it appeared that the yield should be 400 bushels per acre or more.

Early Blight (Alternaria solani) was present throughout all the Northern New Hampshire fields in unusually heavy proportions this year.

Scab (Actinomyces scabies) and Rhizoctonia (R. solani) were found as traces only in most fields. However, in Milan both diseases appeared to be more prevalent and severe than in an average year.

Heavy infestations of aphids, leafhoppers, flea beetles, and tarnished plant bugs were present throughout the area. Occasional evidence of grub and wireworm injuries were also present.

In Northern Vermont, Late Blight was found developing on the remaining green potato vines in Newport and Bakersfield. In Newport 1/4 acre of an 8-acre field had been dug earlier and about 25% of the dug tubers were developing Blight Rot. Digging of the remainder of the field was being delayed until the vines were completely dead. A moderate scattering of Blight was also found on the vines throughout an undug field in Bakersfield. Late Blight Tuber Rot was found in 2 undug potato fields in Windham; the amount could not be determined at this time. These were the only cases of Late Blight found in Vermont at the present time, and Mr. H. L. Bailey of the State Department of Agriculture stated that this is one of the years of very small Late Blight incidence in the State.

Blackleg was found in 2 undug fields in Windham. Apparently more than a trace will be found present when the fields are dug. Scab was widely scattered and severe throughout one undug field in Bakersfield.--Robert C. Cassell, Sept. 11-16

POTATO DISEASES OBSERVED IN MARYLAND: During the middle of June, Blackleg was noted causing 1% loss, and Leaf Roll (Virus) about 2%, in a field near Chase in Baltimore County in eastern Maryland.

During the third week in June visits were made to farms in the middle and lower Eastern Shore Counties. The potato crop in the Denton-Hurlock-Salisbury area in Caroline, Dorchester, and Wicomico Counties was damaged by drought. In the southern potato section at Snow Hill and Pocomoke in Somerset and Worcester Counties recent rains had favored the late-planted crop and yields seemed likely to be normal. Blackleg was seldom observed; 2 fields near Pocomoke and one field near Salisbury each showed a trace. Early Blight attack was light in all fields visited in the Pocomoke-Snow Hill area. Rather severe Leaf Roll infection of 2 and 6% of the plants, respectively, and a slight amount of Rugose Mosaic (Virus), were noted in 2 fields north of Pocomoke. Two days during the week were devoted to the Golden Nematode survey, with Dr. W. A. McCubbin and Dr. B. G. Chitwood of the U. S. Bureau of Entomology and Plant Quarantine, in the vicinity of Pocomoke and Snow Hill. The Golden Nematode was not found. Rootknot (Heterodera marioni) was common on potato roots in this area, and a loss in yield amounting to 5% was estimated by various members of the Golden

Nematode survey group.

It appeared that home garden and commercial crop yields would be greatly reduced this year in Carroll County in northern Maryland, visited during the first week in August, because of late planting and the prolonged drought that followed. Leaf Roll was very difficult to detect in the field in this area during the growing season, because of the leaf-rolling effect of the drought. In fields observed at harvest, Net-Necrosis was very abundant; in affected tubers it extended from the stem end well past the center of the tuber. Small tubers sometimes showed a complete necrosis of the entire tuber. In a field at Mt. Airy fully 30% of the tubers were affected by Net-Necrosis. Similar losses were sustained by several large growers near Browningsville in Montgomery County. The seed used was certified seed from a northern State. These growers, and many others in the State, and also dealers, complained to the State inspection officials at planting time that the seed stock this year was the poorest they had seen in years.

Charcoal Rot (Sclerotium bataticola), or a disease resembling it, was affecting about 1% of the tubers on 3 farms visited in the Mt. Airy-Browningsville area.--E. A. Walker.

SCAB AND FAILURE OF TUBER SET IN ILLINOIS: Scab was observed on Cobblers being harvested in Adams County during the week ending August 19. The variety Sequoia, which had been planted by several growers in Madison County, was apparently failing to set any potatoes.--J. S. Tidd.

LATE BLIGHT AND OTHER DISEASES IN SOUTH DAKOTA: A few fields were examined in Clark and Codington Counties in eastern South Dakota. Scab was prevalent in some fields. Black Scurf (Rhizoctonia solani) also was of local importance.

A few tubers infected with Late Blight were found in one lot of potatoes being graded. There does not appear to be any reason to expect that more than a trace of Late Blight Tuber Rot will occur in this area of South Dakota.--Ian W. Tervet, Sept. 11-16

POTATO DISEASES IN COLORADO: A survey was made in western and southwestern Colorado from September 10 to 13. In Rio Grande County potato vines were damaged by frost. It was difficult to make disease readings but it appeared that Bacterial Ringrot was more prevalent than last year. It was also more prevalent in Montrose, Montezuma, and La Plata Counties than it was in 1943. Infection in fields examined ranged from 2 to 10%. Blackleg, Fusarium Wilt (F. oxysporum), Early Blight, and Mosaic (Virus) were also common.

In Morgan County in northern Colorado during the week ending September 23, Fusarium Wilts (F. oxysporum and F. solani f. eumartii) were quite prevalent. Early Blight was very prevalent in all fields but was causing no damage. Scab and Bacterial Ringrot were noted in trace amounts in the fields inspected.--E. W. Bodine.

SUMMARY OF THE MORE IMPORTANT PLANT DISEASES TAKEN IN CONNECTION WITH THE INSECT AND PLANT DISEASE SURVEY IN THE GENERAL VICINITY OF PORTS OF ENTRY FROM JANUARY 1944 TO JUNE 30, 1944

(Bureau of Entomology and Plant Quarantine)[1]

Cercospora sp. on Camellia japonica at Richmond Hill, Georgia; no prior report of a Cercospora on this host according to Dr. Leland Shanor of the Emergency Plant Disease Prevention Project of the U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering.

Septoria betae Westd. on Swiss chard at Seaside, California; not previously recorded for California.

Marmor cruciferarum ? Holmes (cauliflower-mosaic virus) on cauliflower at Seattle, Washington.

Lethum australiense var. typicum Holmes (tomato spotted-wilt virus, typical strain) on lettuce at El Centro, California.

Entyloma australe Speg. on Physalis sp. at Kathlamet, Washington; may be first report for this State.

Aspergillus sclerotiorum Haber on tomato at Brownsville, Texas; seems to be the first report on this host.

Stagonospora baccharidis Ell. on Baccharis neglecta in Texas is a rare fungus described from Virginia half a century ago.

Coryneum sp. on Castanopsis sp. at Savannah, Georgia, appears to be an undescribed species.

Endothia gyrosa (Schw.) Fr. on Petrocia redisiana at Avery Island, Louisiana, appears to be a new host record for this fungus.

Elsinoë piri (Wor.) Jenkins on apple at South Bend and Mt. Vernon, Washington; found in the conidial stage according to identification by Dr. A. E. Jenkins of the Division of Mycology and Disease Survey, Bureau of Plant Industry, Soils, and Agricultural Engineering.

Morenoella ilicis (Tr. & Earle) Th. on Ilex glabra from Richmond Hill, Georgia; listed from Mississippi only in the revised check list of plant diseases in the United States, by Dr. Freeman Weiss of the Division of Mycology and Disease Survey.

Phomopsis juglandina (Fckl.) Hoehn. on Juglans regia at Concord, California, apparently is the first report of this European fungus in the United States. On the same host at the same locality what appears to be Massaria seriata Cke. was collected. This fungus has been reported on hickory from South Carolina.

Exosporium sp. on quince, Brunswick, Georgia; the genus has not been reported on this host.

Cladosporium colocasiae Sawada (?) on elephant ear (Colocasia esculenta) at Richmond Hill, Georgia; on record from Japan but no description of the fungus was found.

Septoria sp. on Lyonia sp. at Richmond Hill, Georgia; according to Miss E. K. Cash of the Division of Mycology and Disease Survey the fungus does not agree with any species reported on Ericaceae.

Cercosporina ilicicola (A. Maubl.) Sacc. on Ilex opaca from Georgetown, South Carolina and St. Simon Island, Georgia; there are no specimens of this fungus in the Department mycological collections, according to Dr. Shanor.

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[1] A similar summary for the period June 1943 to December 31, 1943 was given in the Reporter, 28 (7): 274-275, Apr. 1, 1944

Pestalotia sphaerelloides Ell. & Langl. on Raphiolepis umbellata at Savannah, Georgia; new host for this fungus.

Pestalotia sp. on camphor tree at Darien, Georgia; may be an undescribed species according to Dr. Shanor.

Helminthosporium sp. on cowpea, Seabrook, South Carolina, on young plants; not Helminthosporium molle, according to D. P. Limber of the Bureau of Entomology and Plant Quarantine, which appears to be the only species reported on this host. Also collected on mature plants at Burton, South Carolina.

Colletotrichum sp. on basil at Needham Heights, Massachusetts; no record of any species on this host according to Dr. Shanor.

Dendrophoma sp. on peach at Portland, Oregon.

Elsinoë veneta (Speg.) Jenkins on boysenberry and loganberry at Gig Harbor, Washington.

Cladosporium sp. on dasheen, Richmond Hill, Georgia; not reported on this host.

Phyllosticta sp. on parsley, Greenport, Long Island, New York. According to Dr. Shanor, pycnidial measurements and spore characters indicate P. petroselini Rothers described from the Caucasus. No Phyllosticta on parsley is included in the mycological collections.

Cercospora viticola (Lév.) Sacc. on Vitis rotundifolia at Savannah, Georgia, abundant. The perfect stage is Mycosphaerella personata Higgins.

Puccinia seymouriana Arth. on Spartina patens, Savannah, Georgia; appears to be the first record of this rust on this host for Georgia.

Phyllachora swieteniae Petr. & Cif. was collected on mahogany (Swietenia mahagoni) at Coconut Grove, Florida. According to J. A. Stevenson of the Division of Mycology and Disease Survey this apparently is the second collection of the fungus, and the first for Florida.

Sphaceloma sp. on Camellia japonica, at Savannah, Georgia; not recorded in check lists of Seymour or Weiss.

Cercospora sp. on Photinia serrulata, Richmond Hill, Georgia; does not agree with any Cercospora represented on this host according to Miss Cash.

Entyloma fuscum Schroet. on Papaver sp., Thibodaux, Louisiana; appears to be a new State record.

Elsinoë sp., Sphaceloma stage, Rosburg, Washington, on Viburnum opulus; apparently is a new host record.

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